



# Risk Management at NASA and Its Applicability to the Oil & Gas Industry

## ***INTERNATIONAL REGULATORS' FORUM***

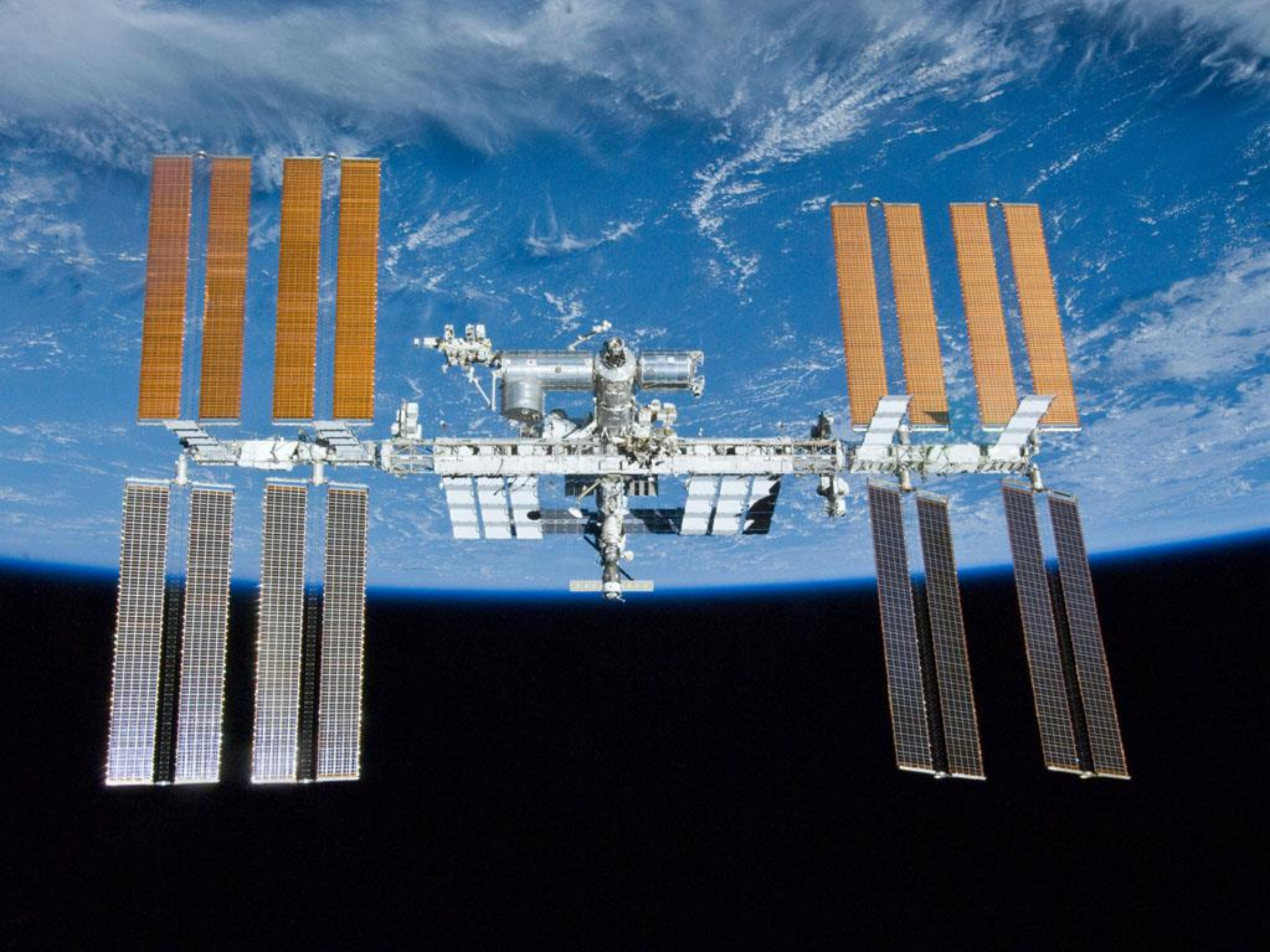
October 19, 2015

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# International Space Station

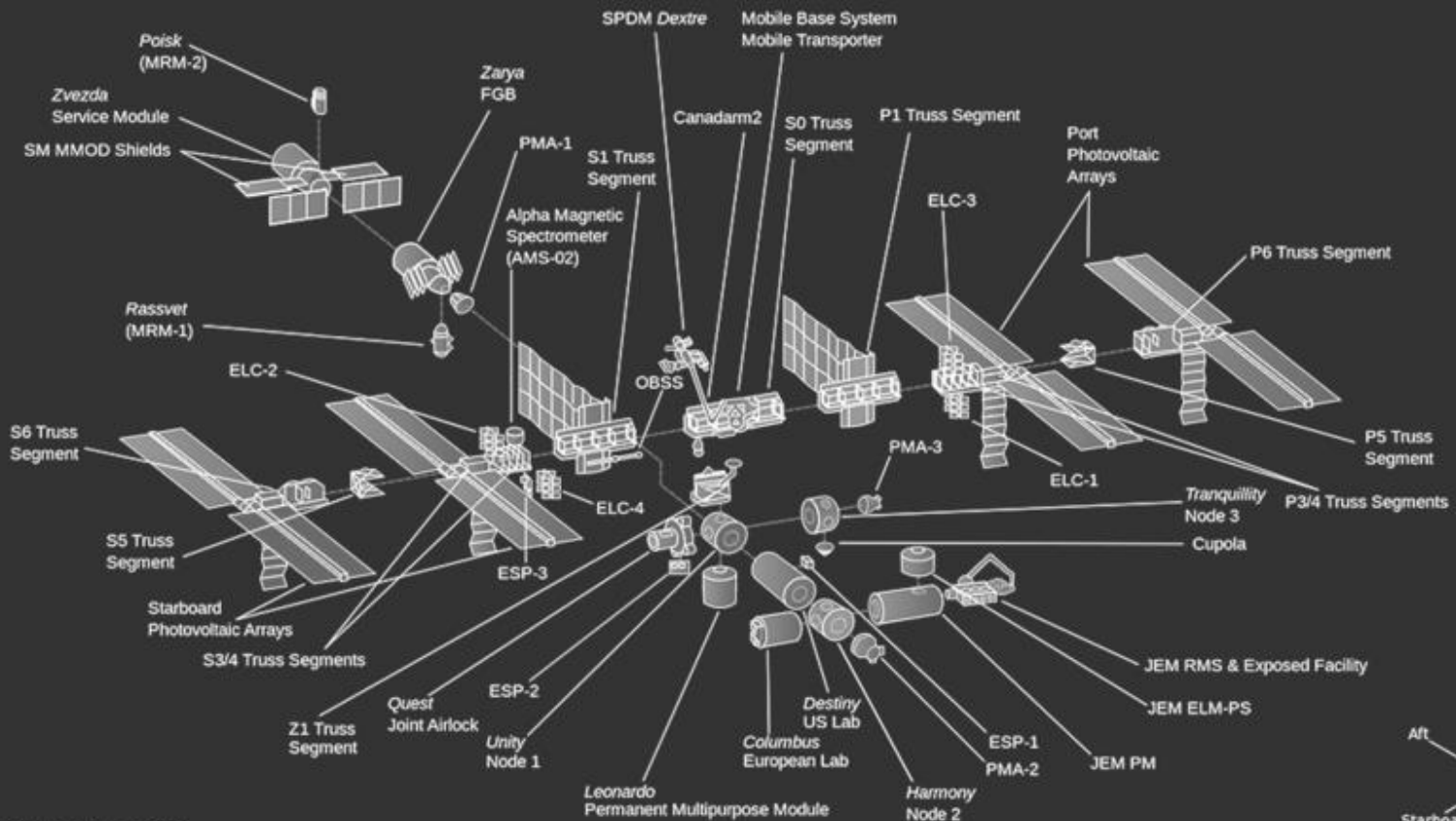


# International Space Station



## ISS Configuration

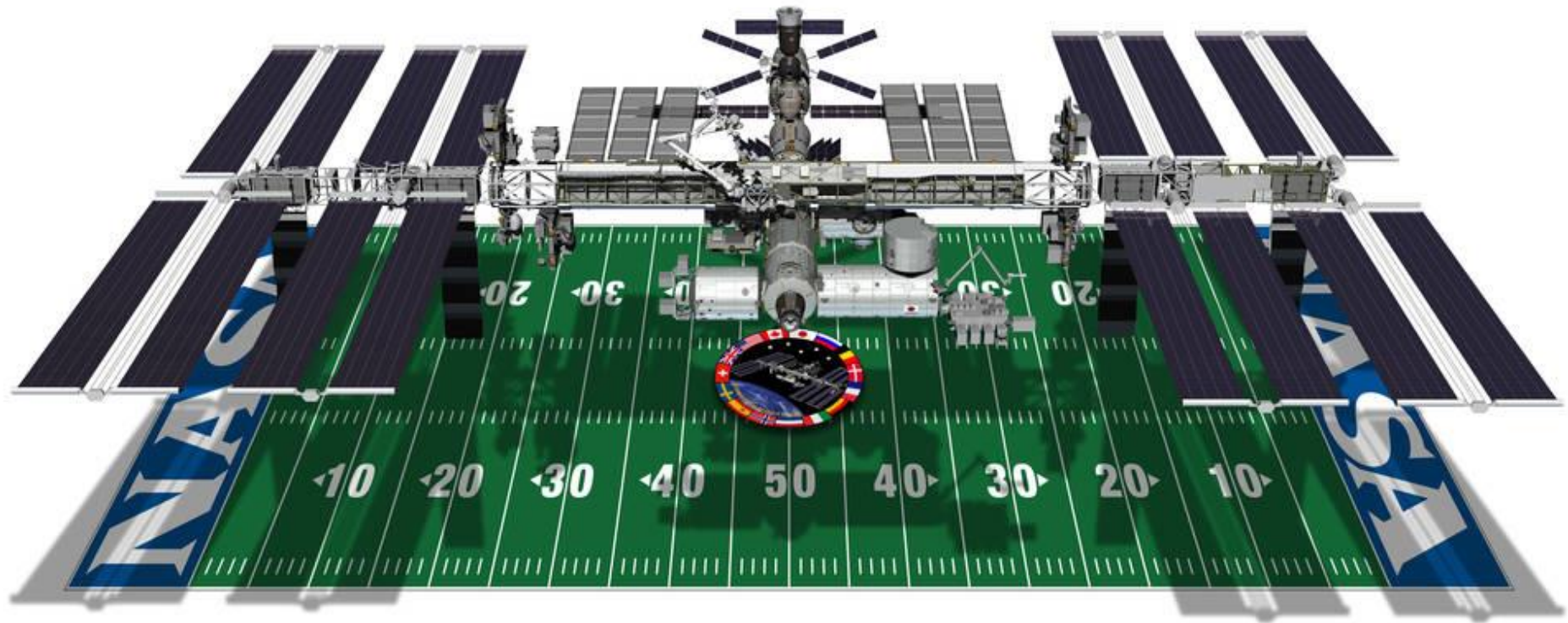
As of May 2011 (ULF6 - STS-134)



# International Space Station Assembly



# International Space Station



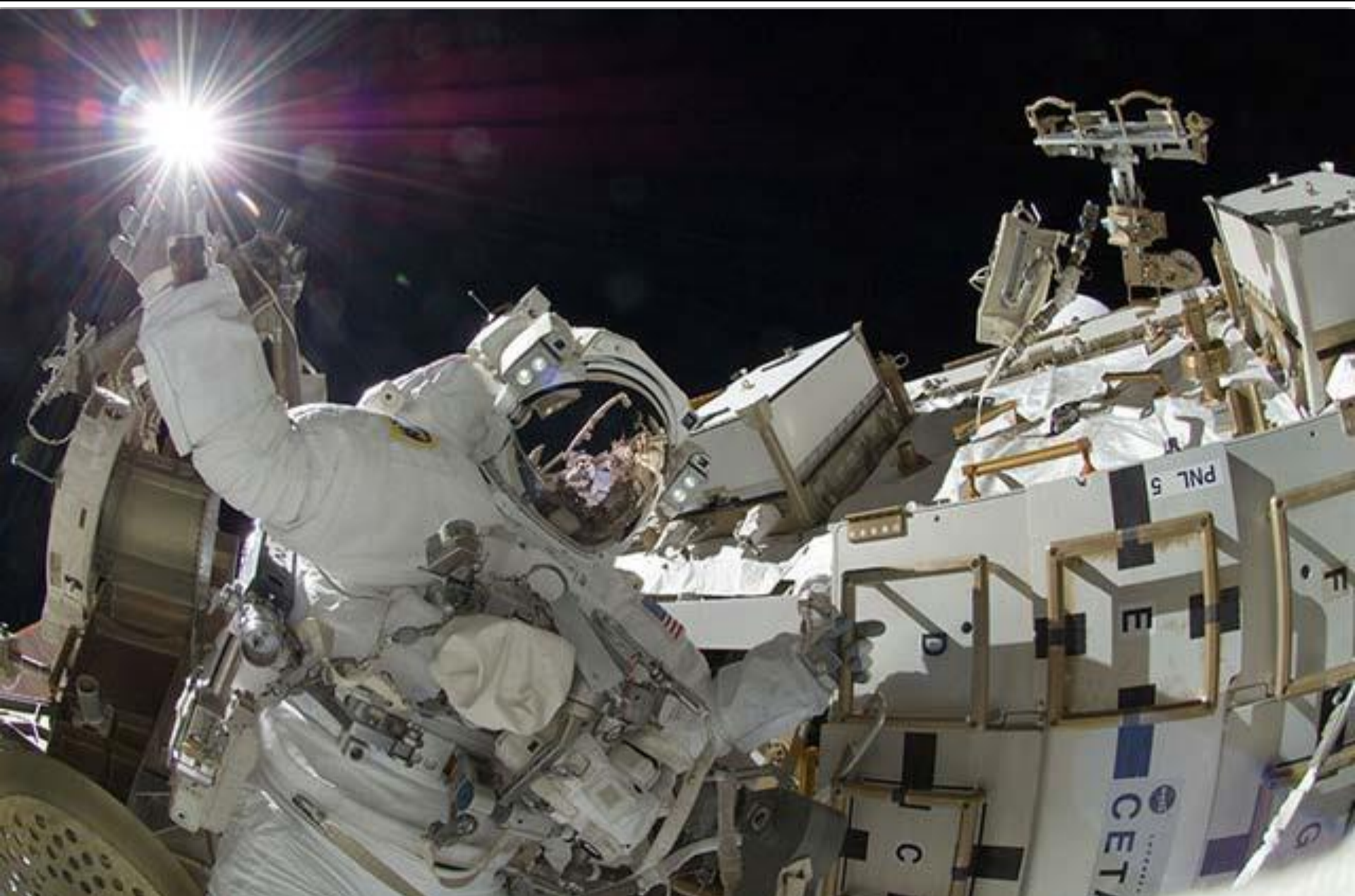


# Complex Operations Dependent on Human Involvement



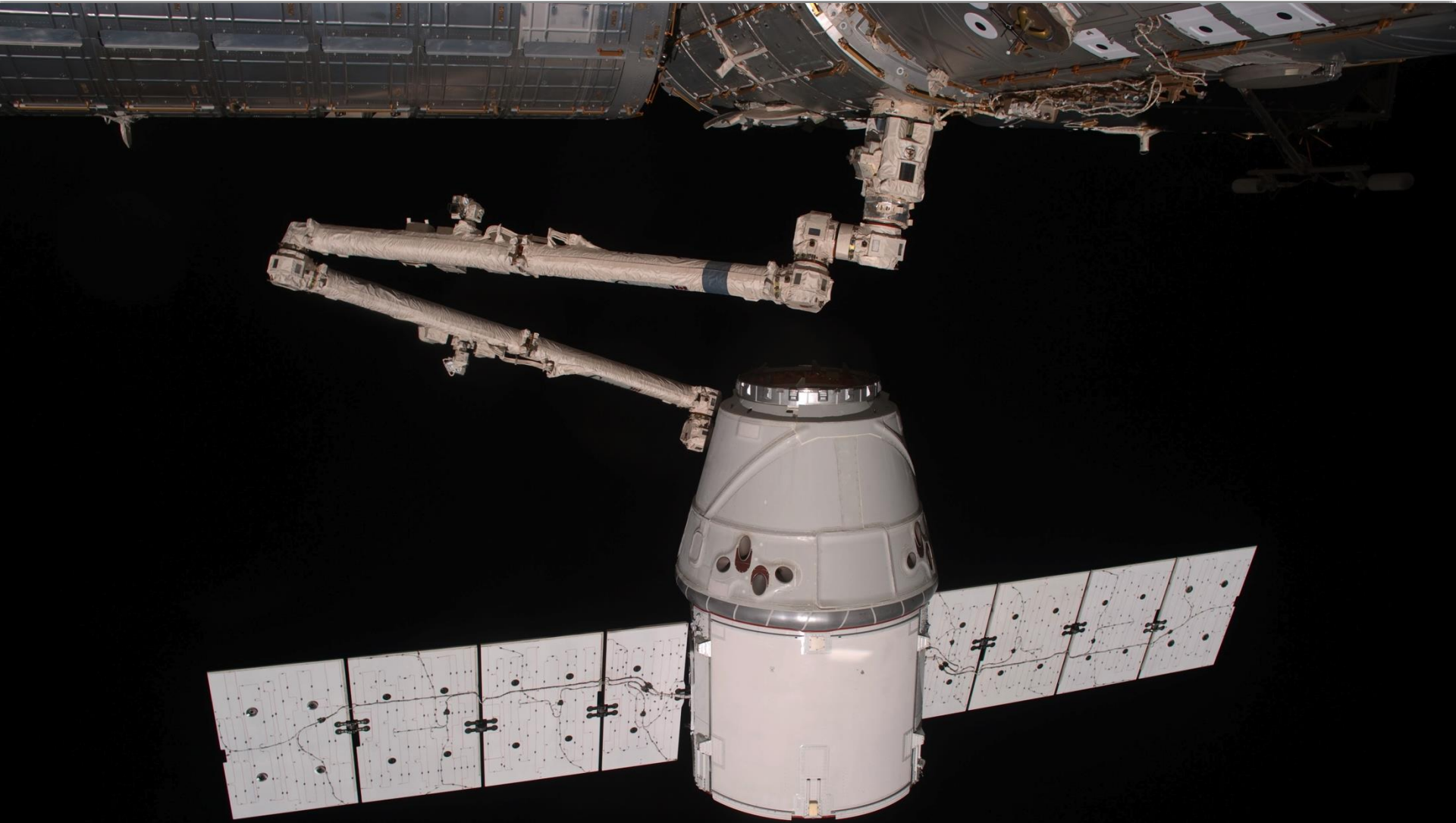


# Repair and Maintenance Operations in a Hostile Environment



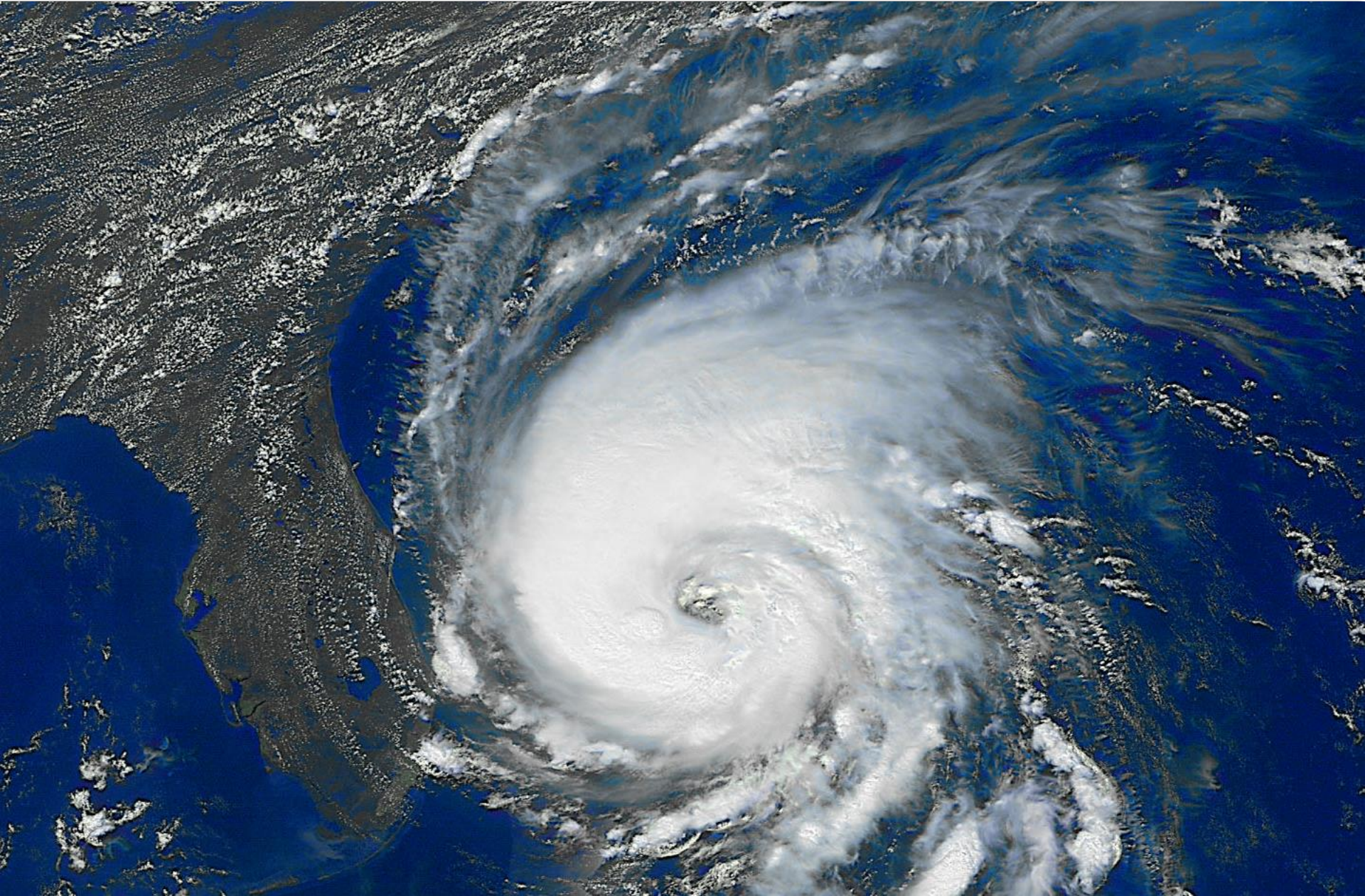


# Ongoing Resupply Operations





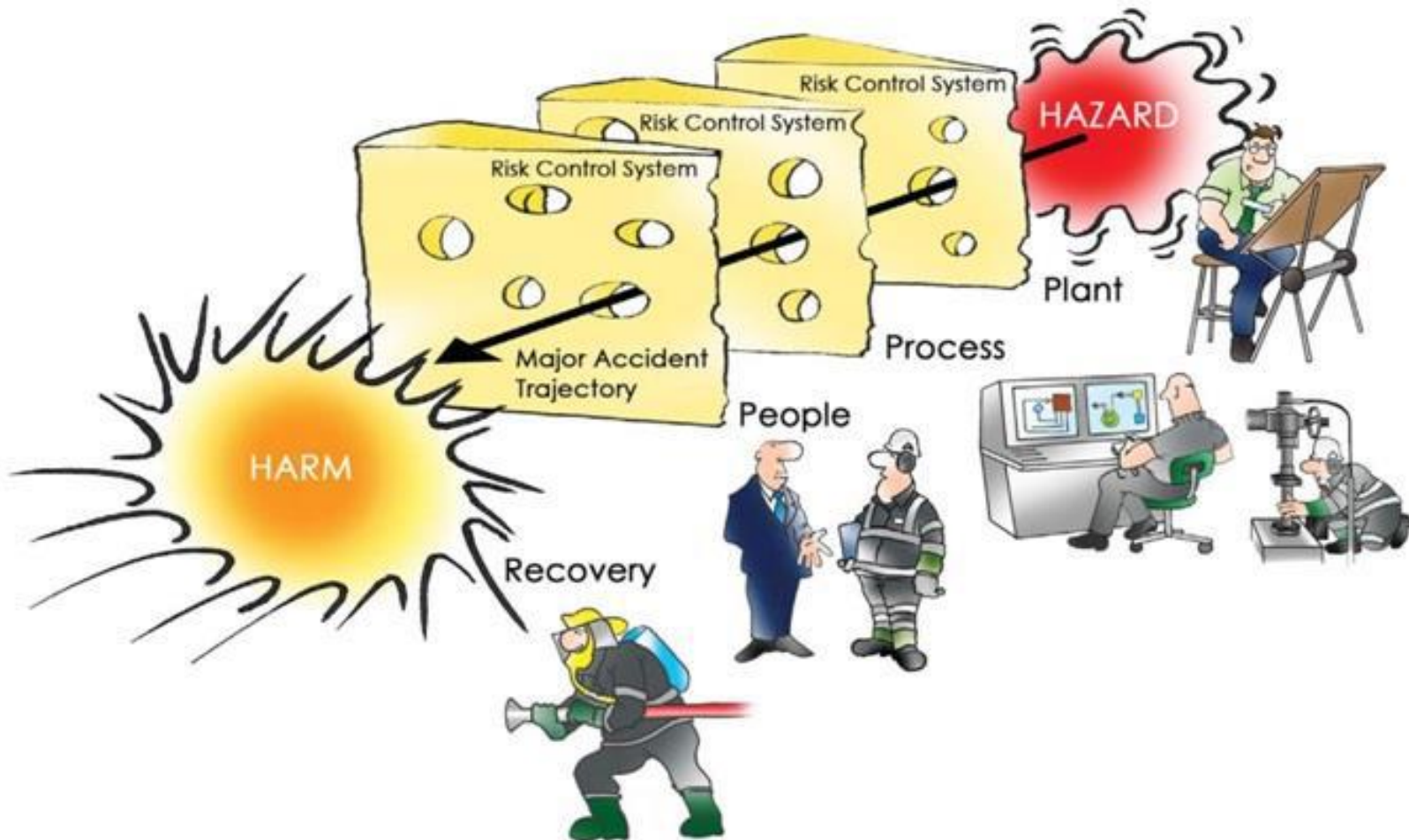
**Isolated and Not Easily Accessible**







# Barrier Based Risk Management

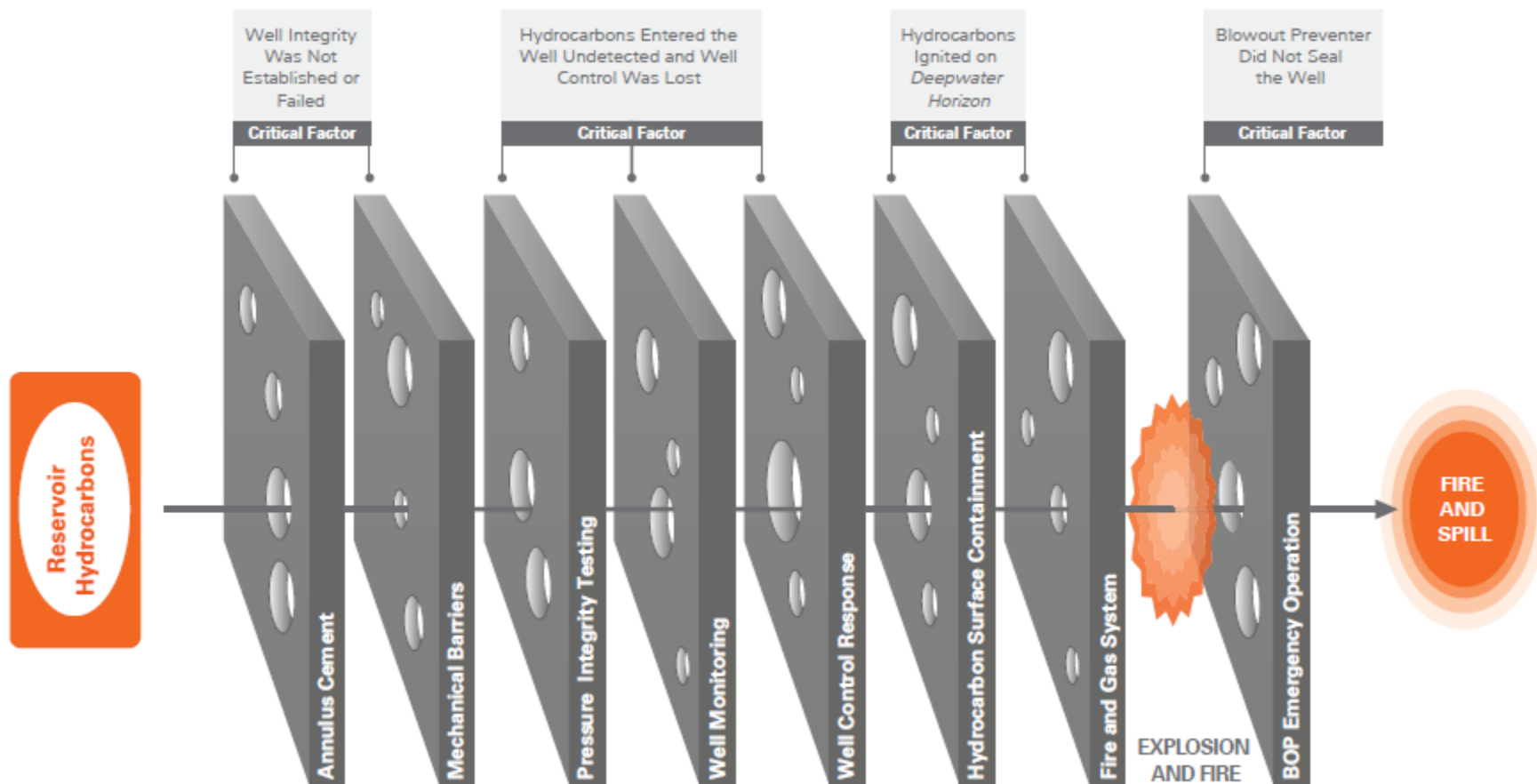




# Deepwater Horizon

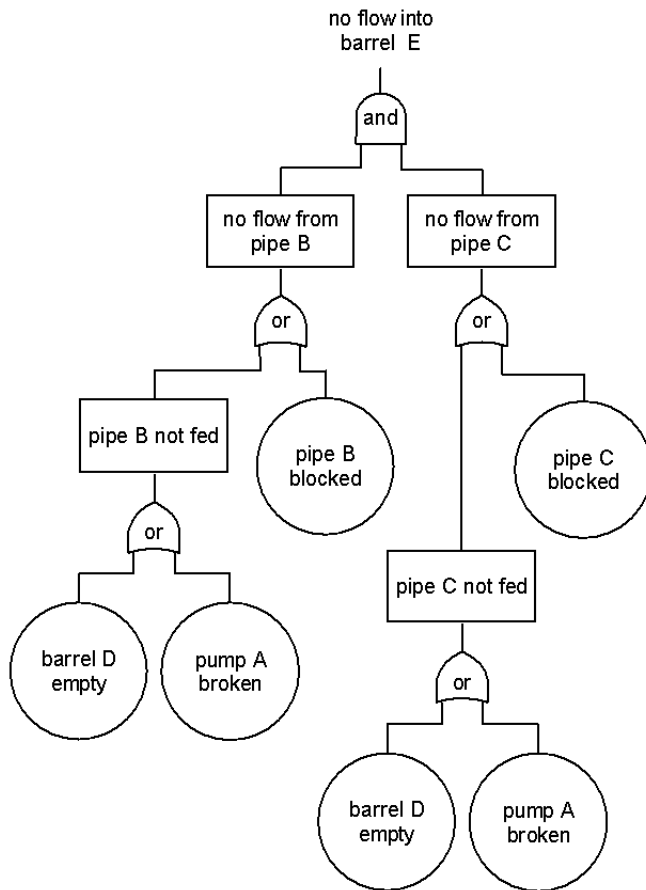


# Deepwater Horizon 8 Key Findings

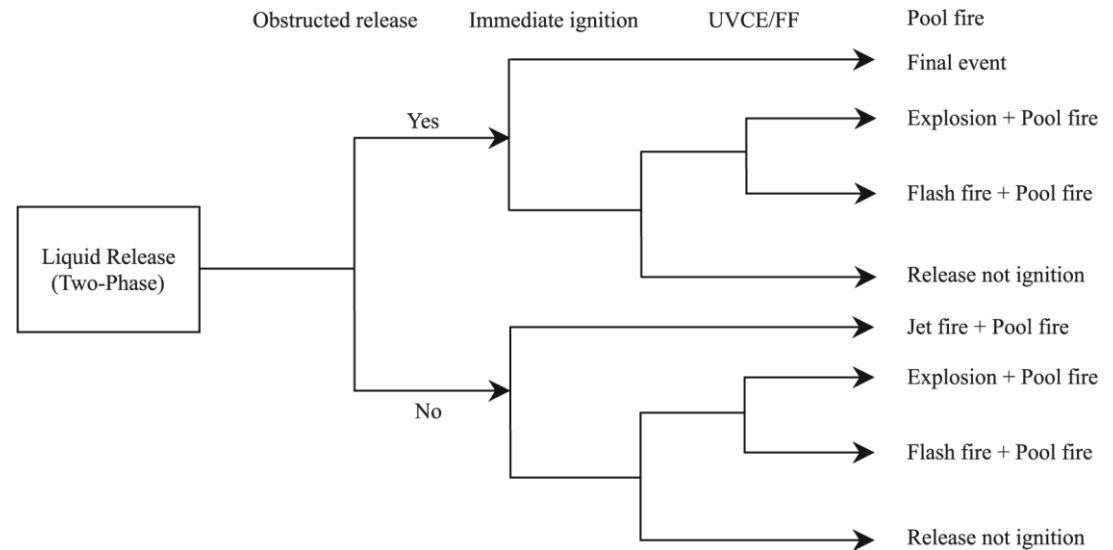




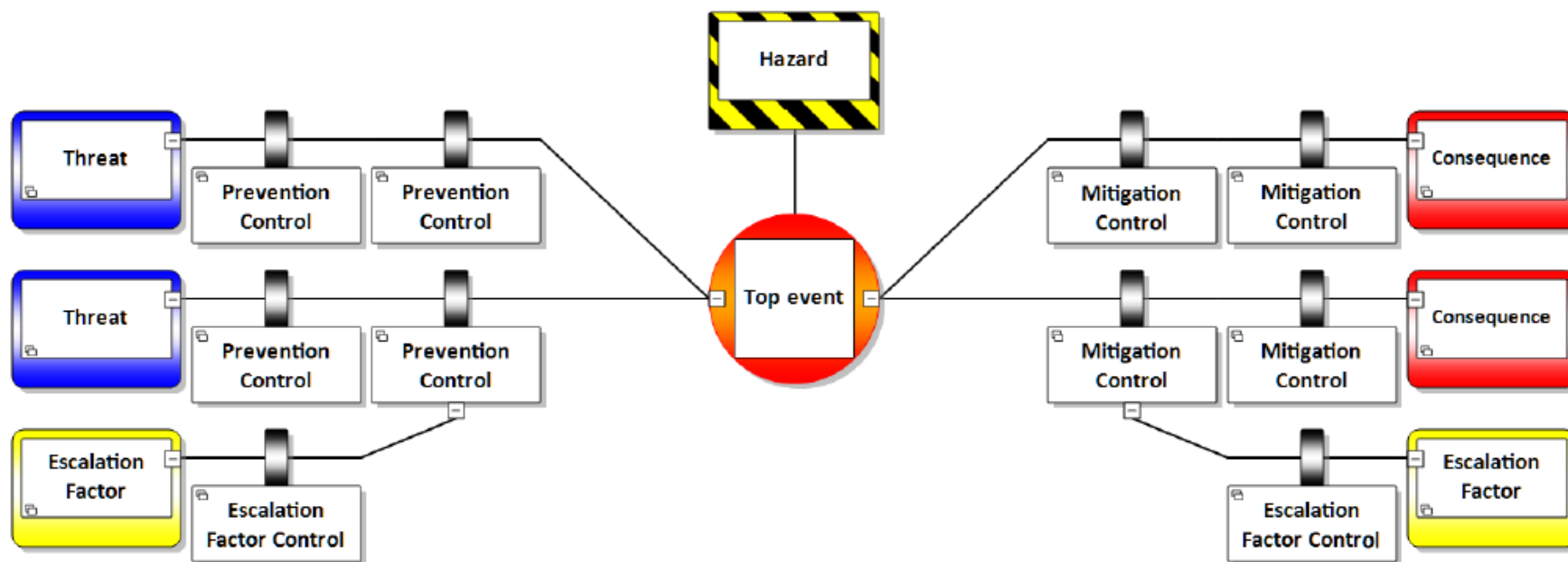
## Fault tree



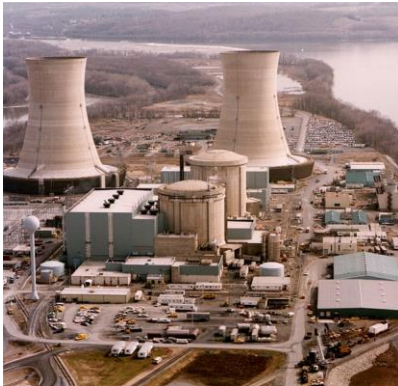
## Event tree



## Basic BowTie



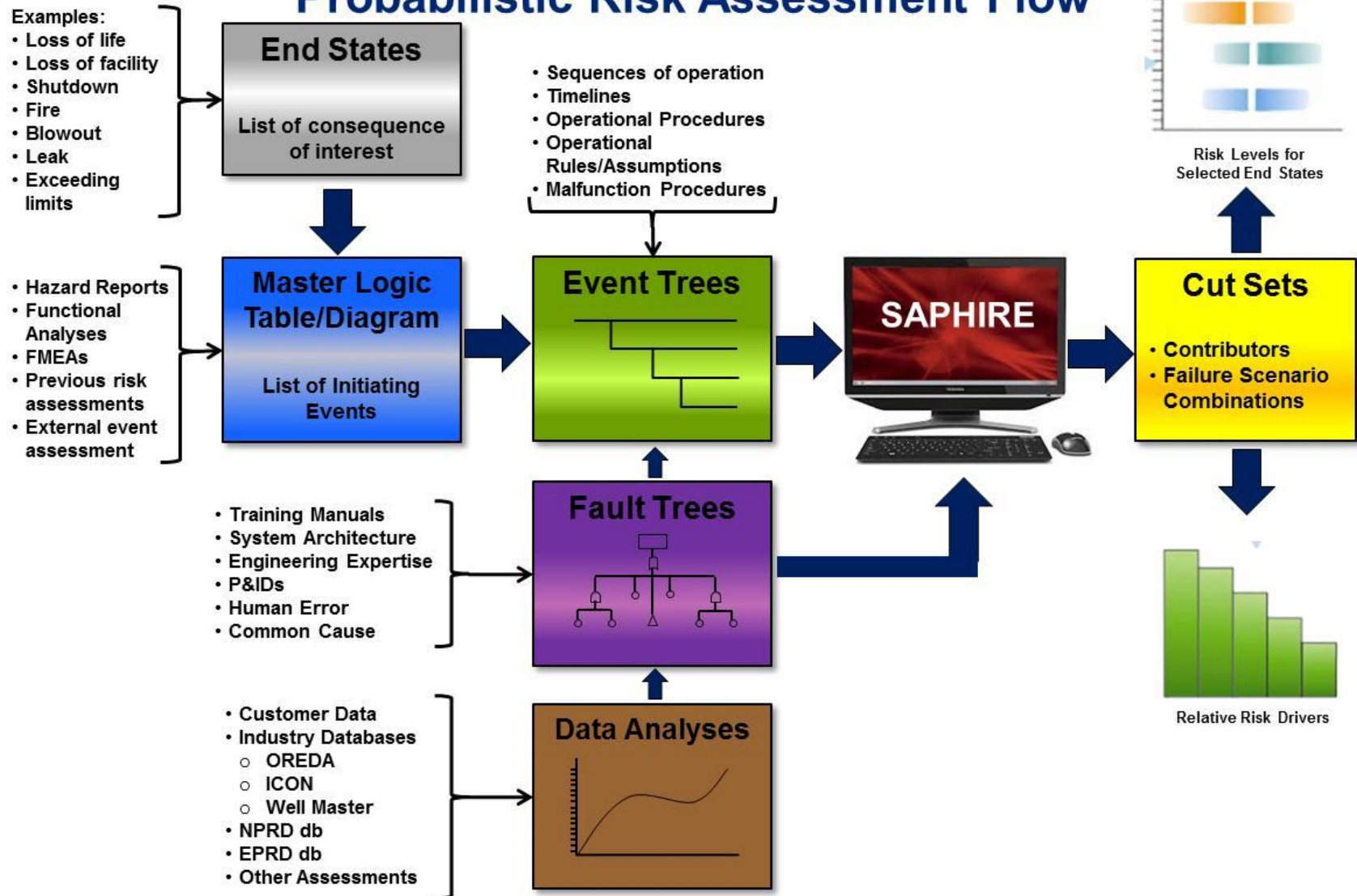




# Probabilistic Risk Assessment (PRA)

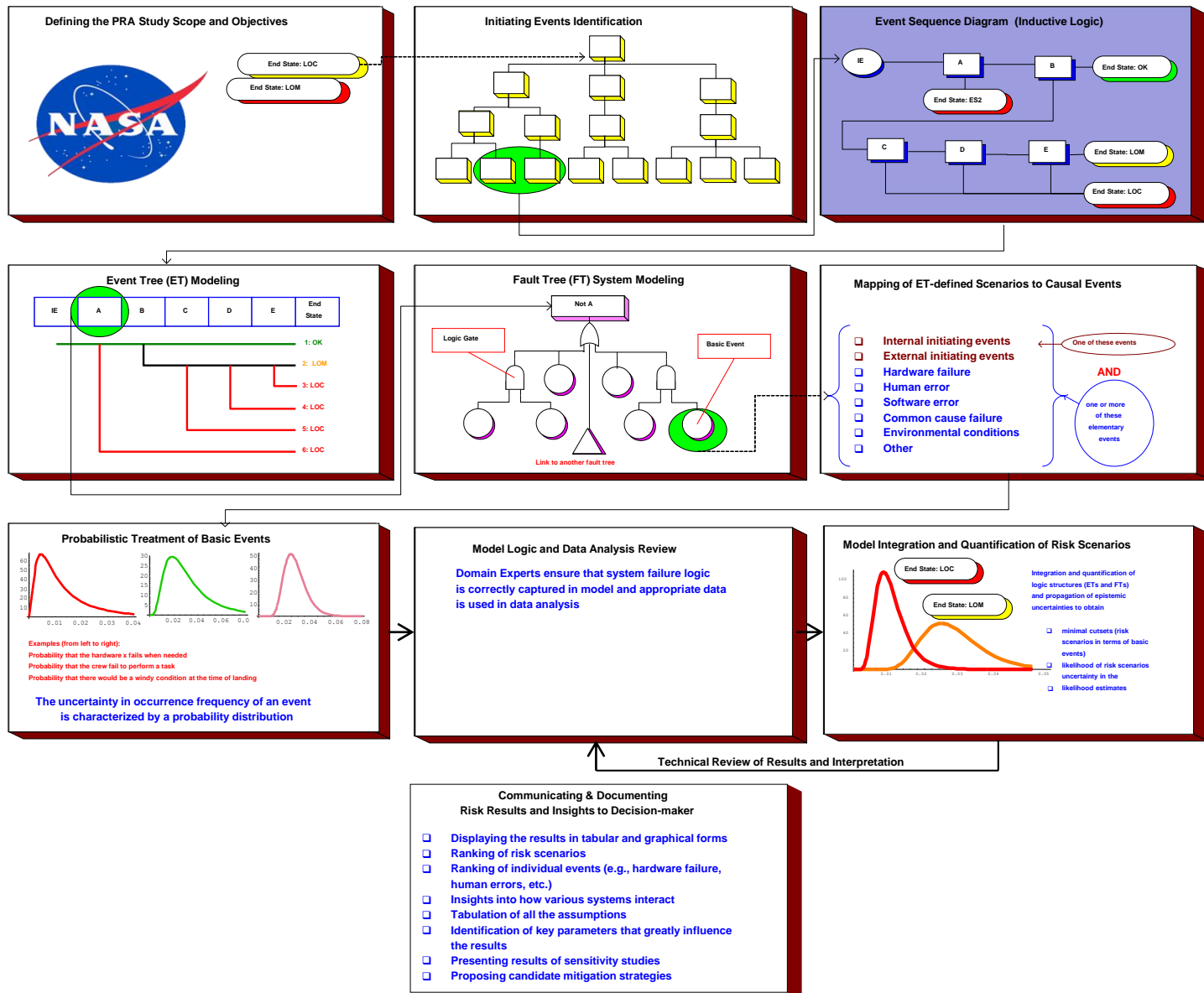


## Probabilistic Risk Assessment Flow

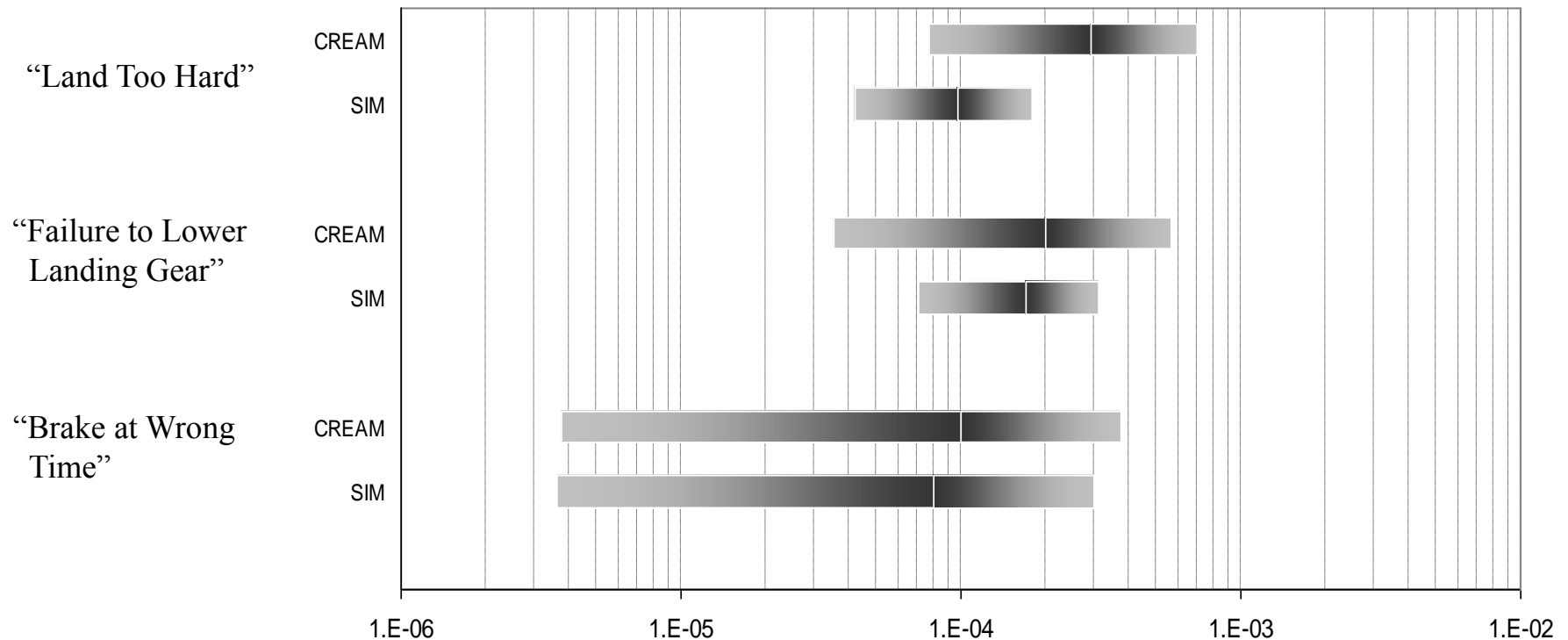




# Probabilistic Risk Assessment (PRA)



## Comparison of Simulation Data and CREAM Results



The CREAM results have since been Bayesian updated using the simulator data



